Docket No.: 50253-113 (P2202)

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of

JAKOB NIELSEN

Serial No.: 08/865,841 : Group Art Unit: 2771

Filed: May 30, 1997 : Examiner: J. Mills

For: ADAPTIVE META-TAGGING OF WEBSITES

TRANSMITTAL OF APPEAL BRIEF

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

Submitted herewith in triplicate is Appellant's Appeal Brief in support of the Notice of Appeal filed May 17, 1999. Please charge the Appeal Brief fee of $300.00 to Deposit Account 500417.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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APPEAL BRIEF

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Assistant Commissioner for Patents
Washington, DC 20231

Sir:

This is a brief on appeal from the Final Rejection by the Examiner dated March 17, 1999. This

Brief is submitted in support of the Notice of Appeal filed May 17, 1999.

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REAL PARTY IN INTEREST

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The real party in interest is SUN MICROSYSTEMS INC. of Palo Alto, California.

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RELATED APPEALS AND INTERFERENCES

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There are no related appeals or interferences which would impact a decision in this appeal or

which would be impacted by a decision in this appeal.

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STATUS OF CLAIMS

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Claims 1-26 stand rejected. This appeal is from the rejection of claims 1-26

STATUS OF AMENDMENTS

No amendments have been filed subsequent to the final Office Action.

SUMMARY OF INVENTION

One aspect of the invention relates to an adaptive index of a document stored on a computer.

When a document such as a book must be searched for a particular topic of interest, an index is often used. Typically, not every word of the book appears in the index, just the words that characterize a subject covered by the book. For example, a dessert cookbook might have an index with index entries that include "cookies" and "sugar cookies" followed by page numbers. The index may not have an entry for "sugar" itself because recipes on most pages in the book would include sugar as an ingredient, and such an index entry listing essentially every page in the document would normally not be considered helpful. If it later turns out that users of the book are very concerned about the kind and amount of sugar in recipes, then the index without entries on sugar would be a disappointment to such users. If the book publisher could capture the words sought by such users, the publisher might see such terms searched as "brown sugar" and "refined sugar" and "unrefined sugar." The publisher might consider including an index entry for "sugar" with subheadings "brown sugar," "refined sugar" and "unrefined sugar" in the next edition.

Appellant's invention provides these kinds of capabilities for documents stored on computers where searches can be monitored and next editions can be generated automatically, either periodically as scheduled, or on demand. Appellant's invention applies to any kind of information stored on a computer, herein "documents," such as databases, files for word processors, and web pages for the World Wide Web (WWW), as long as the document is searched.

Databases have special search functions that utilize organizational advantages to speed searches. Many databases organize data by fields, where each field is designed to contain certain kinds of information with certain characteristics. For example, an employee name field in an employee database may have only letters and spaces, but not numbers, and may be any length up to a maximum of 100 letters and spaces. Databases often produce and maintain indexes based on ordered values found in a field, where the order is often numerical order or alphabetical order. The indexes point to the record in the database where that particular value is found in the field.

Many information files stored on computers are not organized databases, but are more free form, such as documents generated by a person using a word processor. Such free form documents may or may not have indexes like those described above for a cookbook. Many web pages are intermediate in organizational structure and keep a list of keywords stored with each page that are subsequently read and stored by computer programs called search engines. Later, a person surfing the WWW can specify one or more terms and get a list of documents (for example, that the search engine has ever found) where at least one of those words is a keyword. Keywords help speed searches of free form documents in much the way that indexes speed the search of a database.

According to one embodiment of Appellant's invention, if enough users search an information retrieval system containing an on-line version of the cookbook described above, for example, and get hits based on the search term "unrefined sugar," then "unrefined sugar" would be added to the index or keywords stored for that document, or included as meta-tags in the document (e.g. the on-line cookbook). This way the stored information selectively adapts to the concerns of the users who are doing the searching.

As a database example, consider an employee database with one field for last names and another field for first names and another field for middle initials and another field for suffixes, like

"Sr." and "Jr." Also assume a database index is kept of last names but not suffixes. Then, if users begin requesting "suffixes equal Jr." or "Junior," according to the present invention " Jr." or "Junior," respectively, would be added to the database, perhaps as an index unto itself, perhaps as a new index on 'suffix", perhaps as a keyword, or perhaps as some other form of metadata (data about the database itself).

Generalizing these examples, according to embodiments of Appellant's invention, if enough queries of stored information contain a frequently used search term, then that term may be added to the information stored about the document. This way, the stored information adapts to query terms. Nothing like this exists in the prior art to the knowledge of the Appellant.

As stated in prior responses, Appellant's invention is directed to retrieving stored information by processing search queries and selectively adding terms of the search queries to the information stored. For example, "a search engine process . . . permit[s] full text search queries against the documents and files managed by the file management system" (specification, page 10, lines 3-6), "a typical search query [has] . . . a number of terms . . . linked by Boolean operators" (specification, page 11, lines 6-7), and "query terms are then added to the [documents and files, e.g.,] webpages" (specification, page 14, lines 5-6).

For example, in claim 1, "a list of terms used in search queries presented over a period of time [is] selectively added to the information stored."

ISSUES

The only issue on appeal is whether the Examiner erred in rejecting claims 1-26 under 35 U.S.C. §102(e) as anticipated by Brunner et al., U.S. Patent 5,550,971 (Brunner).

GROUPING OF CLAIMS

All claims are argued separately and stand or fall independently of any other claim.

ARGUMENT

The Examiner erred in rejecting claims 1-26 under 35 U.S.C. §102(e) as anticipated by Brunner.

Appellant respectfully submits that the Examiner has not distinguished "search queries" from the "information stored in information storage."

Appellant notes that at least some terms in search queries may be different than "information in information storage." For example, one can search for "carburetors" in a key word list for a set of documents, and for some documents, like the dessert cook book, the information stored is unrelated to the search term. In this example "carburetors" is a search term that is unrelated to the stored information.

The query may contain "keyword equals carburetor" where "keyword" is a field or type of information that may already be stored with the document; but, nonetheless, the keyword list for the document may not contain the term "carburetor." Appellant further notes that some terms in search queries can be related to information stored and still not be among the information stored. For example, a user can search for databases containing "Junior." In this case the search query would contain the term "Junior." The database described above contains "Jr." in the "suffix" field. Clearly, "Junior" is related to "Jr." even though "Junior" is not in the database. In this example "Junior" is a search term that is related to the stored information but is not in the stored information. Thus, search queries may contain terms, like "carburetor" and "Junior," that are not in the information stored about a particular document.

The Examiner has not shown where Brunner teaches or suggests adding terms from a query to the information stored, such as a database.

Brunner is directed to a user interface for a "database" with "data types" and "functional types" relating data types. Brunner provides "a semantic model" for the database that can be varied by user intervention to modify the data types and functional relationships in the database. The user interface is modified based on the new semantic model. The semantic model is presented as "a graph". The same interface can be used to initiate searches of the database. "The user selects a node on the graph . . . to generate a form containing a plurality of blanks." Using the interface a "user enters a query constraint into one or more of the blanks and the database is searched for instances of data meeting the query constraints." (Brunner, Abstract.)

With Brunner, for example, a user does not need to know that the database contains fields like "employee last name" or "employee name suffix" because those query terms are part of the semantic model provided by the GUI in the "form" generated when the user selects a "node" on the "graph" of the "semantic model." However, when the user enters "constraints," the user may be selecting values for one or more of the fields, that are not in the database already.

Secondly, the Examiner has not shown where Brunner teaches or suggests adding any portion of the query to the database, thus the Examiner has not shown where Brunner teaches or suggests that "terms used in search queries . . . be selectively added to information stored." In fact, Brunner teaches the opposite. Brunner takes terms from the database to construct the forms for the search query. The search query is then completed by the user who inserts values in the blanks. Nothing from the search query is subsequently added to the database.

Thus Brunner does not provide functions or advantages of Appellant's invention. For, example, Brunner does not teach or suggest adding "Junior" to the employee database. Appellant's

invention selectively adds the term "Junior" from the search query to the employee database, i.e., the information stored. In fact, Brunner does not even teach or suggest adding "Jr." to the database. Appellant's invention includes adding a new index for the database on the employee name suffix field, because such a new index would have a new entry with "Jr." in it, thus adding "Jr." to the database. Brunner does not teach or suggest adding a new index containing "Jr." to the database. Brunner does not teach or suggest adding anything to the database as a result of the query.

The Examiner asserts that the Appellant's "remarks argue hindsight interpretation of the claims rather than the apparent broad language of the claims themselves," (final Office Action, page 2). Appellant respectfully but strongly disagrees. The claim language, for example claim 1, states "terms used in search queries . . . [are] selectively added to information stored." The terminology in this claim language is readily understood by those of ordinary skill in the art. Appellants readily admit that the terminology "search queries" and "information stored" are broad. This broad language notwithstanding, to prove that this claim is anticipated by Brunner, the burden is on the Examiner to show that Brunner adds terms used in search queries to the database. The Examiner has failed to do so. Nothing in Brunner suggests that terms from the query are added to the database.

Independent apparatus claim 1 recites "terms used in search queries . . . [are] selectively added to information stored" which is not taught or suggested by Brunner for the reasons given above. Therefore Brunner does not teach or suggest significant limitations of Appellants' invention, and a rejection of claim 1 under 35 U.S.C. 102(e) is improper. For at least the same reasons, this rejection is improper for claims 2-3 which depend on claim 1.

In addition, claim 2 requires "term . . . added as a meta-tag" which is not where a query term is added in Brunner because Brunner does not add any query terms to the information stored. Therefore Brunner does not anticipate claim 2.

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In addition, claim 3 requires "term . . . added to an inverted index." An inverted index is analogous to the index of a book which points from the term to a location in the document (like a page number or paragraph) where the term is used. An inverted index is not where a query term is added in Brunner because Brunner does not add any query terms to the information stored. Therefore Brunner does not anticipate claim 3.

Independent system claim 4 recites "terms used in search queries . . . [are] selectively added to information stored" which is not taught or suggested by Brunner for the reasons given above. Therefore Brunner does not teach or suggest significant limitations of Appellants' invention, and a rejection of claim 4 under 35 U.S.C. 102(e) is improper. For at least the same reasons, this rejection is improper for claims 5-6 which depend on claim 4.

In addition, claim 5 requires "term . . . added as a meta-tag" Brunner does not add any query terms to a set of meta-tags for a document. Therefore, Brunner does not anticipate claim 5.

In addition, claim 6 requires "term . . . added to an inverted index." Brunner does not add any query terms to a search index. Therefore Brunner does not anticipate claim 6.

Independent method claim 7 recites "high frequency search terms . . . for selective addition to documents or files stored" which is not taught or suggested by Brunner for the reasons given above. Therefore Brunner does not teach or suggest significant limitations of Appellants' invention, and a rejection of claim 7 under 35 U.S.C. 102(e) is improper. For at least the same reasons, this rejection is improper for claims 8-12 which depend, directly or indirectly, on claim 7.

In addition, claim 8 recites "processing each term . . . comprises presenting the term to a user . . . with . . . identifiers of . . . documents or files . . . containing said term" for selecting the terms to be added which is not shown in Brunner which does not add query terms to the information stored. Therefore Brunner does not anticipate claim 8.

In addition, claim 9 recites "processing includes presenting . . . portion of document" for selectively adding to the information stored. For example, a publisher can use this feature to decide if the use in the document relates to use in the query, e.g., to decide if "sugar" in the cookbook relates to the type or characteristics of the "unrefined sugar" of interest to the searcher. Such processing of search terms inserted by the user for adding to the database is not shown in Brunner which does not add query terms to the information stored. Therefore Brunner does not anticipate claim 9.

In addition, claim 10 requires "graphical user interface . . . for adding a term to said document" which is not shown by Brunner which does not teach or suggest adding anything from the query to the database. Therefore Brunner does not anticipate claim 10.

In addition, claim 11 requires "element for selectively adding said term to said document" which is not shown by Brunner which does not teach or suggest adding anything from the query to the database. Therefore Brunner does not anticipate claim 11.

In addition, claim 12 requires "element for adding information about the term added" which is not shown by Brunner which does not teach or suggest adding anything from the query to the database. This feature is useful, for example, for adding a page number to go with the term "unrefined sugar" in an inverted index. Therefore Brunner does not anticipate claim 12.

The method of independent claim 13 recites "storing . . . terms used in queries together with frequency of occurrence." The Examiner asserts that Brunner "shows frequency of occurrence of an object type . . . by the storage of 'instances' of DOT types defined in the model layer" (page 4). Appellant respectfully submits that the object types defined in the model layer are elements of the database, and that frequency of occurrence of object types in the database is independent of and does not provide evidence for frequency of occurrence of the queries or of values of constraints in the queries. For example, the database may have 100 instances of employee name in a database, but only 5

queries for retrieval by employee name. The queries may consist of 4 queries for "Junior" and 1 query for "Senior". Then the frequency of occurrence of instances of employee name is 100, but the frequency of occurrence for queries on "Junior" is 4. Thus Brunner does not teach or suggest a frequency of occurrence of terms in queries. Therefore Brunner does not teach or suggest significant limitations of Appellants' invention, and a rejection of claim 13 under 35 U.S.C. 102(e) is improper.

The method of independent claim 14 recites "generating a . . . database of terms used in queries." Brunner does not teach or suggest generating a database of query constraints, therefore Appellant respectfully submits that the 102 rejection is improper for claim 14. Furthermore, Brunner does not teach or suggest "generating a new term list of terms used in queries" or "using . . . said new term list . . . for adding to documents containing those terms" as are also required by claim 14. Since Brunner does not teach or suggest all the significant elements of Appellant' claim 14, it is not anticipated by Brunner. For at least the same reasons, claims 15-17, which depend directly or indirectly from claim 14, are not anticipated by Brunner, either.

In addition claim 15 requires "documents . . . to which said term may be added as a meta-tag" which is not shown by Brunner because Brunner does not add any terms from a query to the database. Therefore Brunner does not anticipate claim 15.

In addition, claim 16 requires "said term may be added as a meta-tag" which is not shown by Brunner for the reasons given above. Therefore Brunner does not anticipate claim 16.

In addition, claim 17 requires "said term may be added as a meta-tag" which is not shown by Brunner for the reasons given above. Therefore Brunner does not anticipate claim 17.

Independent method claim 18 recites "sorting query terms . . . by frequency of occurrence." Brunner does not teach or suggest sorting query terms, by frequency of occurrence or by any attribute, for the reasons given above. Furthermore, claim 18 recites "highest frequency terms . . . for inclusion

in documents" which is not shown by Brunner which does not teach or suggest including terms from queries into database. For at least one of these reasons, the rejection under 35 U.S.C §102(e) is improper for claim 18.

Independent method claim 19 recites "extracting terms used in search queries . . . and presenting those terms." The Examiner does not show where Brunner suggests extracting search terms to index the database. Indeed, Brunner teaches just the opposite, that the data model of the database is used to construct the search queries. For example, the Brunner "invention interrogates the model to determine how the user interface should be generated" (Brunner, column 15, lines 30-31). "To search the . . . database, a user types query constraints in the areas [of the user interface] to locate specific instances" (Brunner, column 15, lines 59-61). Therefore the rejection under 35 U.S.C §102(e) is improper for claim 19.

The method of independent claim 20 recites "determining if [a] document contains subject matter related to [a] term" (claim 20, lines 5-6) when a document contains a term. For example, claim 20 enables the publisher or author (of the dessert cook book described above) to determine whether a sugar cookies recipe found in the book is related to the term "sugar" in a search for "unrefined sugar." The Examiner does not show where Brunner suggests determining if the database contains subject matter related to a term if the term is in the database. Clearly, the database retrieval of Brunner will return a result if the database contains the term in the field searched, but the Examiner has not shown where Brunner discloses that a separate assessment of subject matter relatedness is made. Furthermore, if relatedness were determined, the Examiner still does not show where Brunner even suggests "adding said term to said document" as is also recited by claim 20, for example, in a new index entry for "sugar." Therefore Appellant respectfully submits that the 102 rejection is improper for claim 20 and requests that the Examiner reconsider the rejection

The method of independent claim 21 recites "terms used in search queries . . . selectively adding . . . to said document or file. . .." which is not taught or suggested by Brunner for the reasons given above. Therefore Brunner does not teach or suggest significant limitations of Appellants' invention, and a rejection of claim 21 under 35 U.S.C. 102(e) is improper. For at least the same reasons, this rejection is improper for claim 22 which depends directly on claim 21.

In addition claim 22 requires "meta-tag is given more weight . . . when ranking relevance" which is not shown by Brunner. Therefore Brunner does not anticipate claim 22.

The computer program product of independent claim 23 recites "terms used in queries . . . for adding . . . to at least one document," and is not anticipated by Brunner for at least the reasons given above.

Independent computer program product claim 24 recites "terms used in queries . . . for adding to documents" which is not shown by Brunner for the reasons given above. Claim 24 also recites "generating a . . . database of terms used in queries" (claim 14 lines 3-4). Brunner does not teach or suggest generating a database of query constraints, which are terms used in queries, for the reasons given above for claims 14. Since Brunner does not teach or suggest all the significant elements of Appellant' claim 24, the rejection under 35 U.S.C §102(e) is improper for claim 24.

Independent computer program product claim 25 recites "extracting terms used in search queries . . . and presenting those terms" which is not shown by Brunner. Brunner does not extract terms from queries to present to a user but does the opposite, i.e. presents a query with blanks to a user for the user to insert terms. Therefore the rejection under 35 U.S.C §102(e) is improper for claim 25.

The computer program product of independent claim 26 recites "terms used in search queries . . . selectively adding . . . to said document or file. . .." which is not taught or suggested by Brunner for

the reasons given above. Therefore Brunner does not teach or suggest significant limitations of Appellants' invention, and a rejection of claim 26 under 35 U.S.C. 102(e) is improper.

CONCLUSION

The Examiner has failed to make a *prima* facie case of anticipation. Each of the claims contains limitations not shown or fairly suggested by the prior art, and each achieves benefits not found in the prior art.

For the reasons given, the Examiner's rejection of claims 1-26 under U.S.C. §102 as anticipated by Brunner should be reversed. Accordingly, Appellants respectfully request such action.

Respectfully submitted,

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APPENDIX

1. Computer apparatus for information retrieval, comprising:

a. a bus;

b. information storage accessible through said bus;

c. a communications interface connected to said bus; and

d. a processor connected to said bus, said processor configured to receive search queries over said communications interface, to process those queries against information stored in information storage, and to provide a list of terms used in search queries presented over a period of time to be selectively added to information stored in information storage.

2. Apparatus of claim 1 in which a term to be selectively added is added to a document or file as a meta-tag.

3. Apparatus of claim 2 in which a term to be selectively added is also added to an inverted index.

4. An information retrieval system, comprising:

a. a network;

b. a plurality of users connected to said network.; and

c. at least one server connected to said network, said server providing search access to a plurality of documents and files stored on said server in response to search queries submitted by users, said server configured to provide a list of terms used in search queries over a period of time to be selectively added to information stored in information storage.

5. Apparatus of claim 4 in which a term to be selectively added is added to a document or file as a meta-tag.

6. Apparatus of claim 5 in which a term to be selectively added is also added to an inverted index.

7. A method of enhancing information retrieval in an information retrieval system, comprising the steps of:

a. providing an element for storing a list of queries submitted to a search engine;

b. providing an element for storing a list of terms used in those queries together with frequency of occurrence, and

c. providing an element for selecting at least a portion of relatively high frequency search terms and processing each term of said portion for selective addition to documents or files stored in said system as a meta-tag.

8. The method of claim 7 in which processing each term of said portion comprises presenting the term to a user together with at least identifiers of a number of documents or files stored in said system containing said term.

9. The method of claim 8 in which said processing includes presenting the term to a user together with at least portions of a document identified by one of said identifiers.

10. The method of claim 9 in which said term is presented to a user with portions of a document in a graphical user interface having a user activatable function for adding a term to said document as a meta-tag.

11. The method of claim 7 further comprising the step of providing an element for selectively adding said term to said document as a meta-tag.

12. The method of claim 11 further comprising the step of providing an element for adding information about the term added to said document as a meta-tag in an inverted index.

13. A method of enhancing information retrieval in an information retrieval system, comprising the steps of:

a. providing an element for storing a list of terms used in queries together with frequency of occurrence, and

b. providing an element for adding at least one term selected from said list based on frequency of occurrence to at least one document containing said term as a meta-tag.

14. A method of enhancing information retrieval in an information retrieval system, comprising the steps of:

a. providing an element for generating a master term database of terms used in queries received by said information retrieval system over a period of time,

b. providing an element for generating a new term list of terms used in queries received by said information retrieval system during a later period of time which are not in said master term list, and

c. using said master term list and said new term list as a source of terms for adding to documents containing those terms as a meta-tag.

15. The method of claim 14 in which at least one term selected from terms from said master term list is used to identify documents or files containing said term to which said term may be added as a meta-tag.

16. The method of claim 14 in which at least one term selected from terms from said master term list is used to identify only documents or files containing said term which have been created or modified since the last time the master term list was used to identify documents or files, to which said term may be added as a meta-tag.

17. The method of claim 15 in which said new term database is used to identify documents or files containing said term to which said term may be added as a meta-tag.

18. A method of enhancing information retrieval in an information retrieval system, comprising the steps of:

a. providing an element for sorting query terms presented to the information retrieval system by frequency of occurrence; to provide a term list;

b. eliminating noise words and stop words from the term list;

c. selecting a portion of said term list containing the highest frequency terms; and

d. processing those highest frequency terms as candidates for inclusion in documents or files containing the terms as a meta-tag.

19. A method of assisting a user in indexing a document the user created, comprising the steps of:

a. providing an element for extracting terms used in search queries presented to a search engine over a period of time; and

b. presenting those terms to said user.

20. A method of enhancing information retrieval in an information retrieval system, comprising the steps of:

a. providing an element for identifying a document containing a term;

b. determining if said document contains subject matter related to said term; and

c. providing an element for adding said term to said document as a meta-tag if it does.

21. A method of operating an information retrieval system, comprising the steps of:

a. extracting terms used in search queries over a period of time;

b. identifying documents or files containing at least one of said terms; and

c. selectively adding said at least one of said terms to said document or file as a meta-tag.

22. The method of claim 21 in which said meta-tag is given more weight than other terms when ranking relevance of documents retrieved in response to a search query.

23. A computer program product, comprising:

a. a memory medium; and

b. a computer program stored on said memory medium, said computer program comprising instructions for storing a list of terms used in queries together with frequency of occurrence, and for adding at least one term selected from said list based on frequency of occurrence to at least one document containing said term as a meta-tag.

24. A computer program product, comprising:

a. a memory medium; and

b. a computer program stored on said memory medium, said computer program comprising instructions for generating a master term database of terms used in queries received by an information retrieval system over a period of time, for generating a new term list of terms used in queries received by said information retrieval system during a later period of time which are not in said master term list, and for using said master term list and said new term list as a source of terms for adding to documents containing those terms as a meta-tag.

25. A computer program product, comprising:

a. a memory medium; and

b. a computer program stored on said memory medium, said computer program comprising instructions for extracting terms used in search queries presented to a search engine over a period of time; and for presenting those terms to said user.

26. A computer program product, comprising:

a. a memory medium; and

b. a computer program stored on said memory medium, said computer program comprising instructions for extracting terms used in search queries over a period of time, for identifying documents or files containing at least one of said terms and for selectively adding said at least one of said terms to said document or file as a meta-tag.